REMARKS

Claims 1, 2, 7 and 21 are presented for consideration. Claims 3-6, 8-12 and 22-29 are pending but withdrawn from consideration following a restriction requirement.

The courtesy of a telephone interview on September 12, 2003 is appreciated.

Claim 1 is amended to more distinctly describe the subject matter of applicant's invention. No new matter is added by these amendments and the amendments are not intended to affect the scope of the claims.

C. Rejection under 35 U.S.C. 112

Claims 1, 2, 7 and 21 were rejected under 35 U.S.C. 112 based on the use of the terms "nanocomposite" and "quantum confined".

With respect to the term "nanocomposite", the prefix "nano" adds a dimensional limitation to the root word "composite". For example, page 10, line 7 refers to "nanometer cluster form of the selected sensing material" where nanometer is a dimensional limitation. Page 11, lines 6-7, lines 8-9, and lines 12-18 provide similar use of the term "nanometer cluster". The prefix "nano" is not intended to refer to weight or mass as questioned by the Office Action, but instead refers to dimension or size.

This application claims priority both in the text and the inventor's declaration to several issued patents as well as U.S. Provisional application 60/061,718. This provisional application states on its title page (reproduced below as Figure 1) that the invention describes "nanomaterials, i.e., materials whose domain size has been precision engineered to domain size less than 300 nanometers, preferably to dimensions less than the domain sizes where quantum confinement effects become significant...". This reference provides a specific definition of "nano". Accordingly, the term "nanocomposite" means a composite with a domain size less than 300

nanometers.

PROVISIONAL PATENT APPLICATION

Title: A Method and Process for Developing Fluid Composition Sensors

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Place of Invention:

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Abstract:

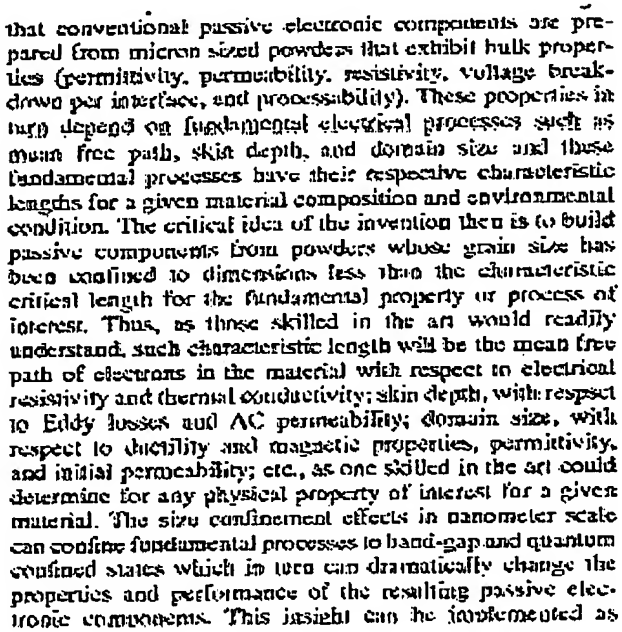
This invention describes a method of developing fluid composition sensors from nanomaterials i.e. materials whose domain size has been precision engineered to domain size less than 300 nanometers, preferably to dimensions less than domain sizes where quantum confinement effects become significant and modify the properties of the materials. The method can be used to develop single component composition sensors and multicomponent composition sensors when the component is present in gas or liquid.

Figure 1 (excerpt from 60/061,718)

Additionally, for matter of record, the applicants respectfully add that several co-owned, issued prior patents (e.g. US Patents 5,952,040 and 5,788,738) also state and define "nano" as a prefix in "nanomaterial", "nanostructured", and specifically "nanocomposite".

With respect to the term "quantum confined", the portion of U.S. 60/061,718 cited above describes "quantum confinement" as a dimension or size effect that modifies the properties of the materials. The term as used in this patent has the same meaning as that in the prior patents. Specifically, for example, in co-owned U.S. Patent 5,952,040, filed in 1997 and with a common inventor, this term is discussed in detail. In column 9, lines 30-52 and elsewhere in the '040 patent, the term quantum confined is taught with fundamental processes and characteristic lengths. Specific illustrations are provided. It is shown in the '040 patent that this term is definite since the characteristic lengths used to define this term by those in the art, is definite. For example, mean free path is a definite, quantitative term of any material. Per '040

patent, "quantum confined" in this specific context means particles with domain size less than the mean free path of the substance. :



that conventional passive electronic components are prepared from micron sized powders that exhibit bulk properties (permittivity, permeability, resistivity, voltage breakdown per interface, and processability). These properties in turn depend on fundamental electrical processes such as mean free path, skin depth, and domain size and these fundamental processes have their respective characteristic lengths for a given material composition and environmental condition. The critical idea of the invention then is to build passive components from powders whose grain size has been confined to dimensions less than the characteristic critical length for the fundamental property or process of interest. Thus, as those skilled in the art would readily understand, such characteristic length will be the mean free path of electrons in the material with respect to electrical resistivity and thermal conductivity; skin depth, with respect to Eddy losses and AC permeability; domain size, with respect to ductility and magnetic properties, permittivity, and initial permeability; etc., as one skilled in the art could determine for any physical property of interest for a given material. The size confinement effects in nanometer scale can confine fundamental processes to band-gap and quantum confined states which in turn can dramatically change the properties and performance of the resulting passive electronic components. This insight can be implemented as

Figure 2 (excerpt from U.S. 5,952,040)

Accordingly, the limitation "quantum confined" as used in this application has a clear and definite meaning in view of the meaning of these terms in cited prior patents. The term restricts the size of the nanocomposite of claim 1 to dimensions less than the characteristic critical length and as a result of which material properties are modified. It is respectfully submitted that the term "quantum confined" is a term of art that was well-established at the time the instant invention was made and the claims submitted should be interpreted based on the established definition in co-owned prior patents with a common inventor.

D. Rejection of Claim 1 under 35 USC 102

Claim 1 was rejected under 35 U.S.C. 102 based upon the Fukuzawa et al. reference. This rejection is respectfully traversed. Claim 1 is amended to clarify that the quantum confined nanocomposite is a powder. To the extent Fukuzawa et al.

show a composite structure at all, the reference does not show or suggest a powder. The monolithic structures taught by Fukuzawa et al. could not be successfully modified to meet the powder limitation of claim 1. Additionally, Fukuzawa et al. do not offer any motivations for such a modification or method. Accordingly, claim 1 is believed to be allowable over the relied on reference.

E. Conclusion

In view of the above, claims 1, 2, 7 and 21 are believed to be allowable and the case in condition for allowance which action is respectfully requested. The references that were cited but not relied upon are no more relevant that those references that were relied upon. No fee is believed to be required by this response as determined on the accompanying transmittal letter. Should any other fee be required, please charge Deposit 50-1123. Should any extension of time be required please consider this a petition therefore and charge the required fee to Deposit Account 50-1123

Respectfully submitted,

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